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## **Telecommunications**

### ***Telecommunications Standards '90 Symposium***

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# Telecommunications

## Telecommunications Standards '90 Symposium

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[Selected English papers from the proceedings of the Symposium on Telecommunications Standards '90 held 17-18 Jul 90 in Tokyo and sponsored by the Telecommunication Technology Committee]

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## **Policies and Issues in Telecommunications in Japan for the 21st Century**

*91FE0018A Tokyo SYMPOSIUM ON  
TELECOMMUNICATIONS STANDARDS '90  
in English Jul 90 pp 10-12*

[Article by Jiro Kawasaki, parliamentary vice minister for posts and telecommunications]

### **[Text] Opening Remarks**

Thank you. My name is Jiro Kawasaki and I am currently serving as the Parliamentary Vice Minister for Posts and Telecommunications.

I am very grateful for the opportunity to give the keynote address at this symposium on standardization in the telecommunications industry.

All of you gathered here today are professionals at the forefront of standardization in your own countries, and the fact that you have been able to get together, exchange opinions and deepen your friendships here today is, I think, very significant in the furthering of telecommunications around the world.

The Ministry of Posts and Telecommunications has the responsibility for overseeing and administering the telecommunications business and industry in Japan, but I am also a user of these services myself: in my home and at my office in Tokyo, I have 15 telephones and 7 facsimile machines. The politician's is a busy lot. It is therefore from these twin perspectives that I would like to speak to you today, giving you my view of the telecommunications business and industry, and telling you what I look forward to seeing from it in the future.

### **The Liberalization of Telecommunications**

Let's begin by looking at the liberalization of the telecommunications business and industry.

As you are well aware, Japan made a radical reform of its telecommunications system in April 1985. Looking to develop a base suitable for the information oriented society of the future, we decided to bring the principle of competition into what to that time had been a legal monopoly.

One of the most readily perceived effects of this reform is the wide variety of telephones now in use in people's homes and offices. The phone today has become even more of a necessity than it used to be. And tariffs have fallen. In 1985 if you wanted to place a longdistance call from my hometown, Iga Ueno in Mie Prefecture, to Tokyo it cost you 400 yen for three minutes. Now it only costs 280 yen if you go through NTT, and only 250 yen if you use one of the new telecommunication carriers. Tariffs have also dropped for international calls. Again, in 1985, if you made a three minute daytime call to the United States using international subscriber dialing, it cost you 1,530 yen for three minutes. Now both KDD and its new international carriers give you the same call

for only 680 yen. It is, then, now cheaper to call from Japan to the US than the other way around, and this used not to be the case.

As of the end of last May, 62 new Type I carriers and 857 new Type II carriers entered the telecommunications market. They are handling a wide variety of services, including mobile telephones, pagers and value-added networks. The production value for the telephone terminals market reached 480 billion yen in 1988. We have liberalization to thank for that, too. As you are all aware, one of the biggest reasons the market was able to jump so high is the development of G3 facsimile standards. When they first went on sale facsimiles cost over 1 million yen. But technical innovations and market competition have made it possible to buy one now for under 100,000 yen. They are now moving from the office to the home and have become something close to a second telephone. Liberalization of the telecommunications business and industry has resulted in lower prices and more services here in Japan.

### **Internationalization**

The next topic I'd like to look at is internationalization. Up until now, the biggest problem in this area has undoubtedly been the differences from country to country in international phone charges in the past. Telecommunications are now being viewed as a trade issue, and recently came up for discussion during the service trade negotiations of the GATT Uruguay Round. This indicates quite clearly how vital a role telecommunications play internationally as part of the infrastructure that supports the economy. It also shows that the business and industry, including equipment manufacturers, are being targeted as a strategic field. While it is dangerous to lump everything together in discussions of this sort, the construction of telecommunications networks and systems must not only reflect international trends, it must also be an area mutually open to international involvement. It is my belief that the establishment of transparent, free economic systems will move international relations from the sphere of confrontation to the sphere of cooperation and harmony.

Let us shift our focus just a bit. If you travel abroad now, you can dial international calls straight through all by yourself from most large cities. Of course, that's not all good. International calls from Japan can catch up with you even if you're overseas... But this is proof of how far we've come in putting together the infrastructure for an international telephone network. Naturally, greater internationalization of corporate activities has resulted in demand for networks able to provide advanced services like video and data transmission, and the network that will meet these demands is the Integrated Services Digital Network (ISDN), a project being pursued by countries around the world.

## Standardization

To summarize things so far, the word "standardization" has emerged as a key concept both in the liberalization of the telecommunications business and industry and in the development of this advanced network, ISDN. Even if the network is run by a large number of carriers, it is vital from the point of view of users that it acts like a single entity, connecting them up with anybody they desire. To do this, networks have to use the same specifications when they link up with each other. In short, for networks to be able to connect on equal terms, they must be standardized. But once the networks are connected, the terminals on either end must be hooked up too. While this is a fairly simple problem with normal telephones, it becomes more complex when equipment is digitalized. And when we come to terminals, then we have to deal with a large number of manufacturers all competing to get new products with new functions out on the market. Before they can do this, however, there is the issue of connecting different terminals up to each other, and here too, standardization is required. Standardization provides the common conditions under which they can compete in commercializing their goods. Each manufacturer uses its creativity to bring better products to the market as cheaply as it can and users are allowed to choose the terminal they want.

The Telecommunications Technology Council has, in accordance with international standards, formulated a large number of domestic standards for ISDN services. This important work is the first step towards creating an internationally open network in Japan and ensuring users that they will be able to connect with any terminal they wish. I would like to reemphasize, therefore, that standardization is an important factor in the liberalization and internationalization of telecommunications.

Now let us return for a moment to the point of view of the user. You may not be hit over the head with the merits of standardization every time you pick up the phone or dash off a fax, but you do enjoy its benefits despite the fact that you are unaware of it. You people here are the experts, so I will leave to you the predilections of what kinds of telecommunication services we can look forward to in the next century and how they will affect our lives and social activities. Nobody disputes the fact that telecommunications are an even more vital factor in our social and economic endeavors. And given the dizzying rate of technical progress, as a user it is my desire that timely standardization can be achieved. I would hope that such standardization would be responsive to the needs of the market, and can be accomplished in a spirit of international harmony and cooperation.

Thank you.

## Standardization Activities at TTC—Heading Toward New Changes

*91FE0018B Tokyo SYMPOSIUM ON  
TELECOMMUNICATIONS STANDARDS '90  
in English Jul 90 pp 20, 32-54*

[Article by Kohei Habara, chairman, Technical Assembly, TTC]

### [Text] Abstract

Based on members' requests, the TTC has been standardizing telecommunications within Japan to accord with international standards.

At the same time, international cooperation has become increasingly important in the movement to materialize the Melbourne Spirit adopted two years ago at the CCITT's IX General Meeting.

In this lecture, we will discuss TTC's standardization activities targeted for the early expansion of ISDN. We will also introduce outlines of recent international tendencies that will be elucidated by the other lectures.

### 1. Introduction

About six years ago, in May, 1984, the 11th International Switching Symposium, or ISS for short, was held in Florence. The keynote speaker, representing the United States, was Mr. Fred Andrews, Jr. of Bellcore, or Bell Communications Research. I clearly remember the introductory part of his address, as if it were only yesterday. And I quote:

"As recently as ISS '81 in Montreal, the forces that would forever change the United States telephone industry were known, but the inevitability of that change was not understood.... Mr. W. O. Fleckenstein, who presented the keynote address as a Bell System representative, spoke confidently of the evolution of a single network moving definitively and predictably in the direction of new technology and new services. The network he described provided 80 percent of the service in the United States and set de facto standards for the remaining 20 percent....

"Today, both he and I find ourselves in a brand new telecommunications research organization, Bell Communications Research Inc.... The 'Bell System' no longer exists....," unquote.

Following his introduction, Mr. Andrews raised many technical issues ranging from the network evolution caused by the divestiture to interconnections. He also added that, quote:

"Even in stored-program-controlled switches, implementing equal access is more laborious than it may appear....," unquote.

His speech was so vivid that the audience could easily envision the drastic changes to be wrought by the divestiture. He also introduced the establishment of Committee T1 in the U.S.

In 1984, an International Conference on Communications, or ICC for short, sponsored by the IEEE was held in Amsterdam. A week later the ISS was held in Florence. At that ICC, a special panel session entitled "ITU Challenges in a Changing World" was included. I was invited as a panelist. One of the points in my presentation was, quote:

"...According to our experience, recommendations issued by the CCITT occasionally delay the introduction of new systems or services. Early establishment of recommendations is always desired," unquote.

Mr. Andrews was also a panel member, and again spoke about the U.S. situation and the establishment of Committee T1 as well.

Committee T1 was also introduced in an article "They're Ready for Action," authored by Mr. Ian Lifchus, the former chairman of Committee T1, in the magazine TELEPHONY, published April the 2nd, 1984.

Soon after, a similar situation arose in Japan. Even as we were listening to the presentations in Florence and Amsterdam, the privatization of the Nippon Telegraph and Telephone Public Corporation, NTT, was only a year away. However, for almost everyone, myself included, the reality of the situation had not yet sunk in.

At that time, I myself was deeply involved in establishing an INS-network framework at NTT. My hope then was very similar to Mr. Fleckenstein's, as expressed in his talk at the ISS '81, the evolution of a single network moving in the direction of new technology and new services.

Actually, however, the environmental changes which followed were so harsh that in April of the next year, 1985, the new Telecommunications Business Law was enacted and NTT, as well, was privatized. In October, the TTC was established.

I can pretty much say that the establishment of the TTC was similar to that of the T1. It might be said that TTC's basic philosophy was strongly affected by T1's, namely that governmental compulsory standards should be reduced to a minimum, and any other standards left to the discretion of non-governmental bodies.

Since then, five years have passed. In Japan, under NTT's monopoly, the so-called telephony era has been in existence more than ten years now, thanks to clearing up the backlog of telephone subscription applications, and the realization of nationwide Direct-Distance-Dialing service. From this point on, we envision a so-called Information-driven society in which ISDN, for example, is expected to play an important role. Diversified and highly sophisticated services would be provided by multi-vendors. Given this lengthy history, it could be

said that these five years have ushered us into a new era. A transition like this only occurs but once or twice a century. Furthermore, this seems to have coincided throughout the world at about the same time.

To expand a bit, another ISS, the 13th, was held in Stockholm, only one and a half months ago. For keynote speeches, Mr. Andrews, whom I have already introduced, Mr. Pekka Tarijanne, Secretary-General of the International Telecommunication Union, and Mr. Michel Carpentier, Director General of DG XIII of the CEC were invited and spoke enthusiastically about standardization trends. NTT was requested to highlight specific market demands in the field of information technology. This was a remarkable about face, given the history of the ISS, in which switching technologies were the major concern and market or social matters a minor consideration. It seems to me that this great change underlines the importance of considering not only technology, but also social demands, in which standardization plays such an important role. This strongly suggests that telecommunication technologies should be user-driven rather than carrier/manufacturer-driven. In other words, although the carrier/manufacturer-based system of the early years of the telephony era was justified, in the coming ISDN era, user-driven services will come to the fore.

Given this background, I would like to review TTC's five-year history, touch on present issues and then venture to peer into the future.

## 2. TTC: Its Origin and Its Mission

Here, I would like to briefly review TTC's origins. The April 1985 enactment of the Telecommunications Business Law and related legislation opened the Japanese telecommunications market to competition. This inevitably resulted in modifications to the rules and regulations governing Japan's technical standards, not only for terminal equipment but also for networks. Governmental compulsory standards have been reduced to a minimum, coming into play only to ensure that terminal equipment cannot do harm to the network. Other standards have been left to the discretion of non-governmental bodies.

Based on this public opening of the telecommunication market, the need to establish a new voluntary standards mechanism was recognized, thus ensuring the confidence of the carriers, manufacturers and users, as well as a fair marketplace. Moreover, at the MOSS (Market Oriented Sector Selective) meetings on the state of the U.S.-Japan telecommunication market, the U.S. strongly suggested that a non-governmental standard setting body be established to ensure fair and transparent procedures.

Given this background, the Telecommunication Technology Committee, or TTC for short, was established in October 1985 to develop and disseminate Japanese domestic standards for deregulated technical items and protocols.

The purpose of this committee is to contribute to standardization in the field of telecommunications by establishing protocols and standards for connection between telecommunications networks, terminal equipment and telecommunications networks etc., as well as to disseminate those standards.

The activities are summarized in the articles of association as follows:

The committee will:

- develop protocols and standards for the connection of telecommunications networks,
- conduct studies and research on protocols and standards for the connection of telecommunications networks,
- disseminate protocols and standards for the connection of telecommunications networks,
- engage in activities incidental to the above, and
- engage in other business activities necessary to achieve the purposes of the committee.

The TTC is "an organization consisting of private enterprises and associations having an interest in the field of telecommunications and having voluntarily expressed willingness to participate." As such, it was organized and registered as "a non-profit association," under the jurisdiction of the Ministry of Posts and Telecommunications.

### 3. Organization

An organization chart can be seen in Fig. 1 [not reproduced]. The General Meeting determines business plans and budgets, etc. The Board of Directors executes matters adopted by the General Meeting. The Councilor's Meeting examines standards development procedures, assuring impartiality and clarity. The secretariat provides all-round support for the entire organization.

The Board of Directors adopts necessary means from time to time. For example, to obtain fresh insights and suggestions, the Board established a Forum which includes outside academic advisors.

The Technical Assembly develops standards and handles technical matters including surveys and research. It is made up of six Technical Subcommittees or TSCs. The lead TSC, Research and Planning, is mainly involved in technical surveys and terminologies. The other five TSCs are more specialized. Each TSC has two to four Working Groups or WGs.

The Technical Assembly includes the Coordination Committee. This Committee handles all problems in or between the TSCs and WGs, in order to assure the smooth running of all Technical Committee Conferences or Meetings. The Coordination Committee includes the

Chairmen and Vice Chairmen of the Technical Assembly and Technical Subcommittees.

The Technical Assembly, from time to time, also adopts necessary means, for example, the establishment of temporary or ad hoc committees. One recent example is the Organization Review Committee, which so ably completed its task. We also have a Special Committee for User Demands in order to gather a wider range of opinions.

In the beginning, there were three TSCs and seven WGs, then, until the reorganization a year ago, expanded to four TSCs and 13 WGs. Studies carried out by the Organization Review Committee led to a functional reorganization of the TSCs and WGs, in order to secure future efficiency. Current TSC and WG functions differ from those of the past, and their Japanese names were also changed. These organization reviews will continue to be held in timely fashion.

### 4. Membership

Firstly, I would like to touch upon membership fees. These fees are used to defray all costs and expenses. Committee operation is based on the members' decisions. Both domestic and foreign members may participate in Committee activities. However, since a broad range of parties are involved in the telecommunications field, conflicts of interest may arise. Membership, therefore, is divided into four categories: Type 1 Telecommunications Carriers, Type 2 Telecommunications Carriers, Manufacturing Interests and Others. The Type 2 Telecommunications Carriers and Others would be users in the wider sense. Thus, to ensure impartiality, every effort is made to maintain a balance between telecommunications carriers, manufacturers and users.

Membership categories and membership numbers are shown in Table 1 [not reproduced]. There are currently 135 members, including 14 from the United States, three from Europe and one from Korea.

### 5. Standardization Procedures

#### 5.1 Basic Principle

The basic philosophy in formulating TTC standards is as follows:

- (1) To conform to international recommendations or standards.
- (2) To standardize items where international recommendations or standards are unclear, where national standards need to be developed, and where there is a consensus of the members. The relationship between TTC standards and international standards in progress is clarified to avoid any confusion.
- (3) To conduct further studies of any of the items mentioned above whenever the committee is unable to arrive at a consensus.

The principles considered when developing our standards by referring to the Technical Assembly are as follows:

#### Guarantee of Fairness and Transparency

- Promoting awareness of proposed standards
- Setting up an appropriate study period
- The right to express opinions

#### Orderly Meeting Process

- Efficient proceedings assured by advance briefing
- Effective discussion by advance preparation of opinions
- Fair and speedy voting

### 5.2 Detailed Procedure

These principles are realized in the following typical procedure. Study items and their schedules are based on the members' expressed desires. These are compiled into a 5-year plan by Technical Subcommittees, taking into consideration such factors as international activities progress. The plan is reviewed and revised year by year to adjust to changing circumstances, and members' desires. Advance briefing is effective in airing all members' desires, including users'.

Figure 2 [not reproduced] shows a typical procedure. Basically, draft standards are prepared by Working Groups, then reviewed by the Technical Subcommittees for conditions which must be satisfied. After mediation/coordination by the Coordination Committee, the draft standards are posed to all Technical Assembly members at an Advance Briefing Meeting where members are requested to submit any counter-proposals or comments on the drafts. Three weeks are allowed for study of the drafts. Counter-proposals or comments are then examined by Technical Subcommittees through discussions with the members who proposed them.

After this preparatory process, the Technical Assembly is convened to vote on the drafts. On the assumption that the members are informed of the draft details through the advance briefing meeting, a vote on the results of the counter-proposal and comment process takes place.

### 5.3 Relationship Between International and TTC Standards

In the process of developing TTC standards, compatibility with international standards is given the highest priority. Thus, almost all of the standards and protocols TTC has developed are based on, for example, CCITT Recommendations.

Here, let me mention the TTC standard numbering system. All TTC standard numbers begin with J, which stands for Japanese. These standards are further divided into three categories: JT-, JS- and JJ-. JT- signifies standards based on CCITT Recommendations, while JS- signifies those based on ISO standards and JJ- signifies TTC original standards which have not yet been taken

up by any international standardization bodies. The following designations are, as far as possible, based on the CCITT and ISO numbering systems.

In addition to the Standards, we provide necessary Supplements. These supplements furnish detailed information not included in the international standards or recommendations, but necessary for actual implementation of systems or equipment. They are edited so as to be as practical as possible, including, for example, many Q&As. Thus, they are well worth the work expended in providing them.

### 5.4 An Evaluation

So far we have developed TTC standards according to the principles I mentioned. Here, I would like to summarize the results to date.

Table 2 [not reproduced] shows the number of TTC standards approved to date, a majority of which originated from CCITT Recommendations.

We have developed about 5,600 pages of standards. Of these, more than 90 percent have already been implemented in the field, including such major areas as NTT's domestic ISDN services and KDD's international ISDN services. As is known, CCITT's I-series Interface Recommendations were formally approved in the November 1988 Plenary Assembly. We, at TTC, approved the corresponding JT-I Series Standards in May 1987, about one and a half years prior to the CCITT approval, thanks to the careful monitoring of progress in the CCITT. As a result, with Ministry of Posts and Telecommunications' approval, NTT's INS Net-64 Service, INS Net-1500 Service and KDD's International ISDN Service commenced on April 19, 1988, June 27, 1989 and June 1, 1989, respectively. Thus, NTT's INS Net-64 Service predated the CCITT approval by half a year.

A unique JJ-Standard, "Still Video Communication Over an Analog Telephone Network," specifies a method of transmitting still pictures every few seconds to provide a kind of simplified video-telephone service. Wide utilization of terminals based on our TTC Standard is envisioned.

Next, I would like to show you a typical example of a standards development workload analysis in Table 3 [not reproduced]. This analysis is based on the number of man-hours devoted to formal TSC and WG meetings. A lot of work goes on behind the scenes and is never counted because of the difficulty of quantitatively evaluating it. Translation work which is rather peculiar to Japanese is also excluded. Our analysis shows that an average of 1 man-day per page goes into the printed standard documents.

As shown in these figures, nearly half of the work done is devoted to draft preparation. This is because the original documents, for example, CCITT Recommendations, have been fully examined to see whether they are directly applicable or should be amended for domestic use. Options and matters of national concern have also been discussed and determined to be domestically appropriate. The relationship between international standards

and TTC standards are clarified and described in the reference section at the beginning of each document.

## 6. International Trend

Roughly speaking, these past five years were a starting point. During this period, telecommunications, especially standardization, changed considerably worldwide. I can say that these changes will greatly affect TTC activities hereafter. I would like to touch on some of the major changes. However, I'm afraid that because of limited source materials I might overlook something. Fortunately, nevertheless, given the presence of the outstanding representatives of these related organizations, I'm sure we will be briefed more precisely and in more detail as the symposium progresses.

It is my feeling that the divestiture in the U.S. triggered these changes today. So, starting with the U.S. movement seems natural.

### 6.1 The United States

In the old days, the Bell System was primarily composed of AT&T Headquarters, Long-lines, Western Electric, Bell Laboratories and 22 Bell Operating Companies. As Mr. Andrews mentioned in his keynote address, 80 percent of the country was served by the Bell System, and the remaining 20 percent was served by about 1,500 independent companies including GTE and some other major corporations. At that time, the de facto standards of the Bell System dominated the industry.

The January 1984 divestiture resulted in the reorganization of the former Bell System. Twenty out of 22 Bell Operating Companies were reorganized under 7 Regional Holding Companies, or RHCs for short, and the telecommunications equipment market, formerly a Western Electric monopoly, was opened up. In a collateral move, Western Electric itself was allowed to deal with information processing, an area previously prohibited.

Thus, U.S. telecommunications could be said to have changed to a multi-network, multi-vendor era from a single-network, single supplier era.

The establishment of Committee T1 in February 1984, it seems to me, was based on these changing circumstances. Thanks to the U.S. telecommunications industry structure, major members are from the private sector.

### 6.2 Japan

In the old days, domestic telecommunication services were provided by Nippon Telegraph and Telephone Public Corporation and international services by Kokusai Denshin Denwa, or KDD for short. Both firms held a monopoly. The April 1985 enactment of the Telecommunications Business Law opened the Japanese telecommunications market to competition. As a result, the TTC was established. As I have already covered this in detail, I would like to move on to the next area.

### 6.3 EC (European Community)

In Europe, telecommunication services are generally provided by administrations or PTTs. The United Kingdom is a little bit different in this regard.

In the U.K., telecommunication services were also provided by its administration: the General Post Office, and then the British Post Office. Following Japan's example, the British Post Office spun off its telecommunication activities and formed a Public Corporation and became British Telecom, or BT for short. After that, in August 1984, a little bit earlier than in Japan, the Public Corporation was privatized. A competing company, Mercury, was also established. In order to ensure fair competition, an independent regulatory body was created to oversee the telecommunications sector. This Office of Telecommunications, or Oftel for short, is directly responsible to Parliament.

As for Europe, EC market consolidation is scheduled for the end of 1992. A new organization, ETSI: European Telecommunications Standards Institute, was established in March 1988. ETSI is now active and aims to facilitate the elaboration of standards within the field of telecommunications.

I would like to highlight the movement in more detail. In June 1987, the Commission of the European Communities submitted a report, "Towards a Dynamic Economy—Green Paper on the Development of the Common Market for Telecommunications Services and Equipment," which today is known simply as the Green Paper. The Green Paper is a general recommendation for the future development of the telecommunications sector.

ETSI, the new European institute, is a direct implementation of the Green Paper's recommendations. The standards developed by ETSI are vital for the completion of the internal market foreseen by the end of 1992.

Even though the EC is composed of 12 countries, namely Belgium, Denmark, France, the Federal Republic of Germany, Greece, Iceland, Italy, Luxemburg, the Netherlands, Portugal, Spain and the United Kingdom, others which belong to CEPT are also included (here, CEPT stands for Conference Europeenne des Posts et Telecommunications).

Because, in Europe, telecommunication services are usually provided by administrations, the basis of membership in ETSI is somewhat different than membership in similar organizations in the U.S. and Japan.

### 6.4 Korea

Telecommunication services in Korea are provided by the Korean Telecommunications Authority, or KTA for short. In February 1989, the Telecommunications Technology Association, or TTA, was established to develop Korean telecommunication standards.



### 6.5 CCITT and the Spirit of Melbourne

I have briefly introduced the telecommunication environment and standardization activities in some major countries or regions.

In parallel with these regional or national activities, CCITT, at its Plenary Assembly in Melbourne in November 1988, approved Resolution No. 17, entitled "Pre-eminence of CCITT in World-wide Telecommunications Standardization." The Resolution is now better known as the "Spirit of Melbourne," and focuses on the fundamental philosophy needed to cope with future CCITT activities. Resolution No. 17 states that CCITT gives priority to: Modernisation, Flexibility, Efficiency and Cooperation.

In action to implement this philosophy, the High Level Committee was established in the ITU, and an ad hoc group set up in the CCITT.

### 6.6 Interregional Telecommunications Standards Conference

Starting with Committee T1 in 1984, we now have TTC, ETSI and TTA. Based on this, Committee T1 proposed an Interregional Telecommunications Standards Conference between T1, ETSI, TTC and the CCIs (CCIR and CCITT) at Fredericksburg, Virginia in February of this year. The newly established TTA of Korea was invited as an observer. The object of this conference was to foster the "Spirit of Melbourne." The meeting saw an open discussion between those bodies on their missions, roles, working methods, intellectual property issues, and interest in cooperating to make the standardization process more efficient.

Telecommunication environment and standardization activities world-wide are summarized in Fig. 3 [not reproduced].

The atmosphere was considerably enhanced by T1's warm hospitality and the conference carried out successfully. The results, including the "Fredericksburg Plan," are summarized in a report.

The items agreed upon could be abstracted as follows:

#### 1) The Fredericksburg Plan

- i. The bodies represented at the Interregional Telecommunications Standards Conference and others who may wish to join should continue to meet periodically to advance global standards development.
- ii. The Directors of the CCIs (CCITT and CCIR) have offered to host ad hoc meetings for the first informal exchange of information. At these meetings the work plans of the participants are submitted by the participating bodies. Such meetings should be entirely informal in nature.
- iii. Initially, only a limited list may be produced to test the procedure.

iv. These plans are carefully compared with the work programme of CCITT.

v. The participating bodies then have up to date information.

#### 2) Electronic Document Interchange

The value of implementing electronic means of document interchange using ISDN was recognized. The Director of CCITT will be invited to form an ad hoc group between ISO, IEC, ITU, and the Regional standardization bodies for the purpose of drafting an agreed user specification.

3) The chairman of the conference should convey to the ITU High Level Committee that the CCIs should have adequate resources to maintain their pre-eminent position.

4) A second Interregional Telecommunications Standards Conference will be held in Europe in the first quarter of 1991. This conference will be open to all regional/national telecommunications standards bodies with an interest in mutual cooperation to increase the efficiency of the work of CCIs.

Thus, I believe you have realized how cooperation between regional/national standardization bodies and international standardization bodies is increasing.

You have, perhaps, noted the term "regional/national," which deals with regional and national standardization bodies together. This expression or term originated in a discussion TTC presented at the conference. At the beginning of the conference, TTC presented two discussion items as seen in Fig. 4 [not reproduced].

The first item concerns standardization levels:

"Roughly speaking, we have, or will have, three levels of standardization: global, regional and national. Although it depends on the definition of 'Regional,' TTC would be regarded not as a regional body but as a national body."

As a result, the term regional/national which includes both was used during the conference.

The other item was as follows:

"In making standards, high-quality and on-time standards are desirable while maintaining the pre-eminence of international standardization bodies. The standards process flows in two directions. The first, in which draft contributions are submitted to an international standardization organization and result in international Recommendations, can be called up-stream. The other, in which the Recommendations are examined for domestic use resulting in domestic or national standards, which are then disseminated nationwide, can be called down-stream. One important point here is that it would be better to think of these processes as a total flow."

At the same time, TTC clarified its position in Japan. That is, in Japan, the preparation of contributions is

carried out under the responsibility of the Ministry of Posts and Telecommunications, while TTC voluntarily finalizes and disseminates domestic standards. The ministry is organized to handle all necessary issues related to up-stream activities. The name of the organization is the Telecommunications Technology Council, quite similar to our TTC. Actually, the initials are exactly the same: TTC.

Furthermore, as seen in the same figure, Fig. 4, TTC emphasized the importance of recognizing differences such as mission, function, organizational structure, and so on, between standardization bodies.

Through these two discussions proposed by TTC, the terms "up-stream" and "down-stream" became the common understanding of the participants.

Note the word "informal" in (1) Fredericksburg Plan ii in the above conference report. This implies that TTC is not in a position to formally contribute to CCITT activities.

I have introduced the Interregional Telecommunications Standards Conference in some detail. I hope my discussion here will help you to better understand the following presentations by major standardization organizations.

## **7. Future Study Items in TTC**

### **7.1 TTC External Issues**

#### **7.1.1 Cooperation With Other Standardization Bodies**

TTC is already cooperating with T1, ETSI and TTA. We will continue to further these good relations based on a fundamental policy of "Reciprocity." To the extent that cooperation would enhance progress toward world-wide standardization, we will also maintain the same policy with any future organizations.

Maintaining the pre-eminence of international organizations is also a basic philosophy of TTC.

#### **7.1.2 Contribution to the Fredericksburg Plan**

One of the most urgent and important issues at TTC might be contribution to the Fredericksburg Plan. We are in a position to contribute with our best. However, given the nature of TTC, some practical problems still exist.

The largest problem is that TTC is not in a position to formally contribute to the up-stream processes. However, TTC is willing to informally participate in meetings to support the implementation of the Spirit of Melbourne. Concerning the formal contributions, which are domestic issues, we hope that coordination with other organizations will be carried out under the leadership of the jurisdictional authority: the Ministry of Posts and Telecommunications. In any event, I believe, "Efficiency" should be the most important keyword.

Another urgent issue is to examine practical ways to provide Electronic Document Interchange, for which a consensus was reached at Fredericksburg. Electronic Document Interchange could result in ending the paper deluge. However, it might cause another problem, namely a floppy-disc deluge. It seems to me that the levels of each organization, and the levels of documents which should be exchanged are crucial problems which still need to be discussed.

In Japan, we are especially familiar with Kanji-characters which are well-suited to facsimile transmission. A means of effective communication between alphabet system countries and non-alphabet system countries should be studied.

### **7.1.3 Conformance Test**

In order to expect developed standards to be disseminated in the market, every piece of equipment should perform its function as defined in the standards. Conformance tests should be provided to assure this. Actually, however, this will require considerable testing. Moreover, it will be difficult to say which level the testing guarantees. It seems to me that it would be difficult to deal with such man-power intensive tasks within a voluntary body like the TTC. Finding an effective means is a matter best settled at the national level.

### **7.2 TTC Internal Issues**

#### **7.2.1 Nationwide Activities**

At TTC, 94 percent of the active members are located within the Tokyo area where meetings are easily attended, thus allowing half-day meetings, which are extremely efficient. Members outside the Tokyo area, on the other hand, are forced to undergo considerable inconvenience.

In the future, however, as we hope for a nationwide expansion of telecommunication firms as well as members, some other means should be seriously considered, for example, meetings and seminars outside of Tokyo.

#### **7.2.2 Language Issue**

Until now, TTC documents have been prepared in Japanese as they are used for Japanese telecommunications. Actually, however, a large number of the documents are based on translations of international standards or recommendations originally written in English. In some areas, because of the rapid progress of related technologies, the work involved in these translations is not insignificant.

Considerable benefit is derived from documents written in Japanese which, for most Japanese users, is easier to read and results in fewer misunderstandings. However, to keep the voluntary workload to a minimum, a working

method based on the original language might be seriously considered. Of course, consensus among the members should be the basis of this consideration.

### 7.2.3 Dissemination

Great effort has been made in TTC to disseminate the standards developed, both by selling the documents and holding seminars. We will strive to increase these efforts nationwide.

Another important issue is to get users to speak out. TTC has established a special committee to air users' opinions. In the future, an all-out effort will be made to listen to their views.

I have tried to cover some study issues at TTC. There are others, of course. They include, for example, the limits of voluntarism, budget, secretariat, etc. which are probably outside the scope of this symposium.

### 8. Conclusions

As I have repeatedly stated, the telecommunications environment is drastically changing, including technologies themselves, services, operation bodies and, most importantly, international cooperation. They are becoming more and more important. Keeping in mind the importance of the changing situation we are facing, we at TTC will make every effort to further standardization both nationwide and world-wide. For that purpose, I am sure the presentations and panel discussions by renowned personnel in this symposium will be food for thought as regards standards development.

This symposium was planned to gain a better understanding of TTC among related personnel, and to celebrate its 5th anniversary, as well. We will have an opportunity to listen to some very famous speakers from around the world about drastically changing the telecommunications environment.

I hope my presentation guides those to follow.

**Committee T-1 Telecommunications in the 1990's**  
*91FE0018C Tokyo SYMPOSIUM ON  
TELECOMMUNICATIONS STANDARDS '90  
in English Jul 90 pp 56-63*

[Article by Ivor N. Knight, chairman, Committee T1]

#### [Text] Abstract

The speech will review the activities and growth of the North American Standard Organization—Committee T1—Telecommunications, since its formation in February 1984 to the present day.

The structural changes to the administration and technical procedures of the committee, found necessary to keep current with the continued explosion of telecommunications technology and the changing global and national regulatory environment, will be reviewed as will

the increasing involvement of Committee T1-Telecommunications with the development of "global standardization" and the events leading up to the Fredericksburg USA Conference in February earlier this year.

Committee T1-Telecommunications has close affiliation with other standards bodies in the United States. In particular, it is an Accredited Standards Committee of the American National Standards Institute which requires that standards development is performance with due process and participation by all interested parties. The impact of these requirements on the production of national and international standards will be explained and evaluated.

Finally, and most importantly, the future plans of the committee for the production of national and global telecommunications standards to meet the service requirements of multinational commerce, will be addressed. The difficulties of standards development in a society experiencing the merging of information transfer and telecommunications transports and the need to staff our standards development committees with "international scientific managers," are being analyzed. The results of this work and their future application in Committee T1, will be discussed in detail.

#### Forward

In the 1980s we witnessed an explosion in the development and application of new and exciting technology that is revolutionizing the design of the global telecommunications networks. We also witnessed massive changes in the structure and administration of international telecommunications, partly due to this new and innovative technology but principally due to the re-evaluation of the importance of telecommunications to the national trade and commerce in many countries of the world.

Although Committee T-1 is a product of the changing telecommunications culture in the 1980s, it has played a significant role in the transition to the new deregulated and competitive environment that we are experiencing as we enter the threshold of the 21st Century. Standards, whether voluntary or mandatory, are vital for the orderly and cost effective establishment and interconnection of communications networks. In the national networks, the lack of adequate standards is a major inconvenience. In international networks, the lack of agreed standards is much more serious and can impede the expansion of commerce and the growth of mutual understanding and trade between countries.

The exciting technological innovations in research and development laboratories around the world lead me to believe that the technological changes we experienced during the last 10 years, substantial as they were, will pale compared with the transition in communications that will start to take place in the '90s. Committee T-1 is actively preparing for this changing environment by evaluating its structural and scientific capabilities so that

standards development does not substantially lag technological advances. Before giving you some insight into the Committee T-1 approach to the 1990s, I would like to review the purpose and history of Committee T-1 and the present status and activities of this North American standards setting body.

### The Past

Committee T-1 was founded in 1984 and celebrated its 6th birthday in February this year. Prior to 1984, with much of the United States national telecommunications systems design and implementation based on the Bell System Practices, the system and networking standards were primarily "de facto" standards emanating from the same source—the Bell System. When the FCC Computer Inquiry and "divestiture" ended this de facto era, this source was closed.

The Exchange Carriers Standards Association (ECSA) proposed an alternate approach to standards development. This consisted of an open industry committee with elected officers and balanced participation to address the concerns of the telecommunications industry and to develop standards by due process and consensus among the membership. The United States telecommunications industry overwhelmingly supported this approach and the committee was formally accredited by the American National Standards Institute (ANSI) and approved by the Federal Communications Commission (FCC) by March 1985.

With the specific responsibility to focus on those functions and networks' characteristics associated with the interconnection and interoperability of telecommunications networks at interfaces with the end user systems, carriers and information and enhanced service providers, Committee T-1 immediately attracted hundreds of participants to its work, not just from the United States industry and government bodies, but also from similar organizations overseas.

The Committee T-1 membership is comprised of four specific interest groups—manufacturers; exchange carriers; interexchange carriers and users; and general interest organizations. The membership elects its officers and leaders of the technical groups that develop the standards and approves all the work allocated to these standards groups based on industry needs. Membership is open to all who have a direct and material interest in the work of the committee and consequently, with its wide mandate and the international connectivity of United States telecommunications networks, membership is essentially open to all national and international telecommunications interests.

With such a broad participation and area of operation, it is necessary for Committee T-1 to have strong management policies. The business meetings of the committee are therefore subject to strict quorum and participation requirements and the standards development work is governed by clearly worded committee bylaws and methods of procedures.

The initial structure of the standards development groups, or "technical subcommittees," was based on the standards development requirements found to be urgent at the formation of Committee T-1. Although this structure is continually scrutinized for compliance with the changing industry requirements, few fundamental changes have been found to be necessary over the six year history of the committee. There are six main areas of standards development performed by six technical subcommittees. These areas are performance; network interfaces; services, architecture and signaling; digital hierarchy and synchronization; operations and maintenance; and an area that is found in all the preceding five—that of new specialized technology. As these areas cover many aspects of the telecommunications networks, it was necessary for the technical subcommittees to establish working groups to concentrate on specific aspects of the work.

The standards development process chosen at the formation of Committee T-1 proved to be successful during these early years. However, the continued rapid development of technology and the changing face of the communications industry is now necessitating a review of the process.

### Today

From its inception, it was clear that Committee T-1 could not fulfil its mandate without taking a major interest in the development of international standards. From an early date, the work in Committee T-1 on new networking concepts, such as ISDN, was used by the Department of State as models for United States contributions to the committees of the ITU, and standards developed by Committee T-1 have been used for national network development by other North American countries and countries in Europe. It was with a great deal of pleasure that Committee T-1 welcomed the Telecommunications Technology Committee to San Diego in 1986 to discuss, what was to become, a valuable joint association. Later, associations were established with other regional standards bodies such as the European Telecommunications Standards Institute (ETSI) and the Telecommunications Technology Association (TTA) of Korea. More recently, Committee T-1 has been invited to talks with the principle standards development organization in Australia and these discussions will take place later this year.

Perhaps the Conference in Fredericksburg, Virginia, that was hosted by Committee T-1 in February this year, underlined the impact of international standards development on national and regional networks, more than any other event to date. At that conference where the representatives of the so-called "regional standards organizations" had the opportunity to discuss and plan cooperative global standards development with the Directors of both the CCITT and the CCIR, it became clear that Committee T-1 can best serve its constituents by active participation in regional and international standards development.

Today, therefore, Committee T-1 is not only developing standards for the various communications networks in the United States, but also developing these standards in consultation with the committees of the ITU and other regional standards development bodies. We believe that such an approach will be beneficial for the establishment of high quality, cost effective communications networks that meet the user requirements both in the United States and throughout the world.

Committee T-1 has grown considerably over the years both in the breadth of its activities and the participation of the membership. Although the number of technical subcommittees has remained the same, some twenty-five working groups are now in operation and meetings of these groups now occupy 11 months of each year.

For standards development in the United States, it is necessary for Committee T-1 to liaise with a large body of national standards development groups in allied fields. Close cooperative efforts are maintained with eight major national standards groups and numerous specialized organizations to ensure compatibility and to reduce the possibility of duplication of effort. To maintain the cooperative effort between regional standards organizations as mentioned above, Committee T-1 has appointed liaison officers from its management team, the Advisory Group. This ensures that contact with these organizations is continuously available and it keeps the committee membership apprised on this important ongoing collaboration.

The production of national telecommunications standards is increasing rapidly. However, the demand for new standards is also increasing as new and improved technology and networking techniques arise. A major challenge for the Committee T-1 management is the continued expeditious development and publication of standards to match this new technology. As an accredited committee of ANSI, Committee T-1 operates in accordance with the model procedures of that organization. These procedures require Openness—participation is open to all parties who indicate that they are directly and materially affected by the standards activity; Due Process—equity and fair play to ensure all interested parties of their right to express a viewpoint and, if dissatisfied, to appeal; and Balance—the opportunity for all parties to participate without dominance by any single interest. These procedures have served, and continue to serve, Committee T-1 well. Although the standards developed by Committee T-1 are voluntary, when produced in accordance with the ANSI procedures, they achieve universal acceptance. However, the procedures are time consuming and special attention must be paid to the management of the process to ensure that undue delays are not incorporated in the production of standards. This area, "the management of the standards process," is therefore a key factor in the Committee T-1 program of standards development. Irrespective of the process of standards development employed, it is our belief that the benefits of the application of efficient

management techniques in the development of standards are considerable and are key to the acceleration of standards availability to the industry.

### The Future

It is clear that the writing of standards for the communications industry is now a completely different business than that which existed 10 years ago. No longer are standards prepared to comply with systems that are already in operation. Today, standards are being produced together with the development of the technology, and laboratory models are being changed in accordance with the progress made in standards development organizations. The cost of poor or inadequate standards is being more rapidly quantified and the impact on various businesses, quickly documented. In a survey of users asking for their opinion on the greatest deterrent to the introduction of digital networks, the lack of standards was identified as the major problem. Methods to overcome this problem is one of the key items in the Committee T-1 strategic plan for the '90s.

The majority of the participants in the technical groups of Committee T-1 are scientists and engineers. The technical quality of their work is extremely high but we have found that the results of this excellent work is being delayed in publication due to inadequate "process management." To reduce this problem to a minimum, the committee has initiated a specialized management training course for our standards experts. We are planning for this course to be available to all our membership and expect that it will be successful in increasing the availability of our standards in the future.

With the increasing visibility of business aspects in standards, I believe that the standards engineer of the future will become more management orientated and the standards development groups in Committee T-1 will be looked upon as "scientific managers."

Committee T-1 is also directing efforts in the rapid merging of information transfer and telecommunications. The intelligent networks of the future will require a reexamination of the structure of our committee—especially the assignment of the work into generic groups. In addition, we are examining the impact of new networking concepts such as the Universal Personal Telecommunications (UPT) as it is vital that these new concepts, if found to be advantageous to the business and public communities, do not suffer delays due to lack of adequate standards.

It is clear that the future work of Committee T-1 will be closely linked to the work of the ITU, the TTC and other regional standards organizations. A close cooperative association will, in my opinion, increase the timely availability of high quality standards for application on a global basis. How close the future linkage will be will depend, to a considerable extent, on the continuing opportunity to discuss our mutual needs and plans for the future at conferences such as this. I would therefore

like to express my appreciation to the organizers for the time to address you this morning.

### ETSI Activities

*91FE0018D Tokyo SYMPOSIUM ON  
TELECOMMUNICATIONS STANDARDS '90  
in English Jul 90 pp 67-72*

[Article by Frede Ask, deputy director of ETSI]

[Text] Abstract

### Standards and Europe 1992

The importance of standards in connection with the European Single Market, especially the free movement of goods and services.

The importance of standards in connection with the liberalization of the telecommunications sector.

The importance of standards in connection with public procurements.

### The Creation of ETSI

The Green Paper of 1987 from the Commission of the European Communities. The leading principles of ETSI:

- Standards should be created more rapidly than hitherto
- The principle of consensus should be replaced by the principle of national weighted voting
- Participation of all interested parties (Administrations, Industry, Public Network Operators, Users etc.)

### Project Teams

The new type of working party for standards making.

### The Output From ETSI

ETS (European Telecommunications Standards), voluntary standards. An ETS can be made mandatory either by transforming it into a NET (Norme europeenne de telecommunications) or through the so-called New Approach by means of an EEC Directive referring to standards.

### Fortress Europe?

The European Telecommunications Authorities before and after the Green Paper of the Commission of the European Communities.

The whole idea with the new set-up (liberalization, mutual recognition of type approvals and creation of ETSI) is to open up the Europe markets not only to the other European countries but also to the non-European exporters.

### Future Directions for European Telecommunications Standardization

The new set-up within the field of telecommunications in Europe is a clear movement away from protectionism and towards liberalism.

### Standards and Europe 1992

As it will be known the European Single Market implies the free movement of persons, goods, services and capital between the European countries. In this connection, standards are crucial. Theoretically, one could in fact introduce the free movement of telecommunications equipment between the countries without having standards. But there would be a risk of some countries denying the import of certain types of equipment by "inventing" technical or safety reasons.

On the other hand if agreed standards exist the legislation is easy: the European Community Authorities (the Council of Ministers or the Commission) can issue a Directive stating that no country is allowed to deny the import of equipment if the said equipment can be proved to be in conformity with acknowledged standards.

The liberalisation of the telecommunications sector means that the customers can buy their equipment where they want and have it installed. The above-mentioned free movement of goods is necessary if this liberalisation should not be an illusion only.

In spite of the liberalisation, substantial parts of the European telecommunications infrastructure will be run by public or semi-public bodies. Here the public procurements play an important role. In order to avoid protection of national industries it is necessary to establish rules which make sure that foreign manufacturers get a chance of delivering their equipment. Here again standards are the tool which ensures that public procurements are run in a correct and transparent way.

### The Creation of ETSI

Against the above background it is easy to understand that the Commission of the European Communities in the Green Paper of 1987 stressed the necessity of creating a European standardization institute for telecommunications products.

The competent and quick response from the governing bodies of CEPT made it possible to create ETSI within an amazingly short time.

Thus ETSI is now in full swing with its activities less than two years after its creation.

The leading principles of ETSI are:

—Firstly the standardization should be made more rapidly than hitherto in order to get substantial results before 1992.

—Secondly the principle of consensus, which had hitherto been governing, should be replaced by the principle of national weighted voting corresponding to that of the Treaty of Rome Article 148.

—Thirdly the participants should not only be the PTTs but also the industry, the public network operators, the users including private service providers and also some research bodies.

#### **Project Teams—A New Type of Working Party**

At the ETSI headquarters in Sophia Antipolis approx. 20 Project Teams counting some hundred experts are now working according to Terms of Reference established by the Technical Assembly. The experts are working either full time or part time.

#### **The Output From ETSI**

The standards worked out by the ETSI Project Teams and Technical Committees shall be approved by the ETSI Technical Assembly in order to obtain the status as ETS (European Telecommunications Standards). These are voluntary standards. It is then up to the national governments and of course the European Commission to make them mandatory standards. This can be done either by transforming them into NETs (Normes européennes de telecommunications) through the method described in the Memorandum of Understanding on European Telecommunications Standardization signed by the CEPT member countries, or it can be done by the European Commission through the so-called New Approach i.e. an EEC Directive refers to existing standards. There is no doubt that as far as the EEC countries are concerned the latter method will gain terrain.

It should be mentioned that before a standard is issued by ETSI it will be approved and implemented according to a procedure respecting the governing principles for standards making i.e. standstill period, public enquiry, approval by national weighted voting and transposition. It goes without saying that the national standardization bodies play an important role in this respect.

#### **Fortress Europe?**

Some people describe the European Single Market, especially within the field of telecommunications, as "Fortress Europe." This is a fancy expression which has no foundation in fact. It is not based on analysis but on feelings.

As a matter of fact the situation is exactly the opposite as it is suggested by the term Fortress Europe. If we look a few years back, Europe consisted of a number of nations each one having a government body (or at least a semi-government body) with the following functions:

- 1) Issue technical specifications
- 2) Sole authority for carrying out type approvals
- 3) Acting as public network operator

It is easy to imagine that a 4th unofficial "activity," i.e. the protection of local industry, is tempting when one national authority is having the above-mentioned 3 functions.

What happens to the telecommunications sector in connection with the Single Market is a separation of the above-mentioned 3 activities (and thus avoiding the unofficial 4th activity). In other words: the free competition is established.

If a foreign manufacturer a few years ago would try to gain access to the European market he would have to go to one country and get hold of the technical specifications (which was quite a complicated matter) then produce his equipment in accordance herewith and then again have the equipment type approved. First then he could start the marketing of his equipment. If he were successful with this activity in one country, he could start from scratch in the next country and so on.

This was Fortress Europe!

#### **Future Directions for European Telecommunications Standardization**

Previously, practically all standardization work within the field of telecommunications in Europe was carried out by the PTTs i.e. the Governments. The creation of ETSI was a radical change towards an increased involvement of industry, users, service providers and network operators. This is clearly a step towards liberalism, i.e. the Governments leave it to the actors on the market to create the standards—like in USA. Of course there will always be areas like safety, frequency allocation etc. where the Governments must have the final word. But the trend towards liberalism is clear and it is here to stay. Thus the European Telecommunications market will be more and more open and transparent to the benefit of not only the European industry but also the non-European industry.

#### **Telecommunications Standardization Activities in Korea**

*91FE0018E Tokyo SYMPOSIUM ON  
TELECOMMUNICATIONS STANDARDS '90  
in English Jul 90 pp 75-91*

[Article by Kwan Ha Lee, president, TTA]

#### **[Text] Abstract**

For the last decade, telecommunications in Korea has achieved astonishing development owing to the drastic fund support of the government, the conversion of telephone business to public enterprise and the opportune introduction of electronic switching systems.

In 1987, a nationwide automation of telephones was accomplished and the number of telephone lines exceeded 10 millions by supplying more than one million lines each year. And total telephone lines will come

up to 15 millions in the end of this year, so it is almost equal to Bell Operation Company in the number of telephone lines.

Like this, telephone service has improved and contributed to the social, cultural and economical growth. However, the public demand sophisticated facilities with high quality and diversified services. The importance of telecommunications as a supporter to achieve the information society in future is recognized, but it is very hard to cope with the rapid environmental change by means of the current compulsory standardization activities.

In response to such trend of the times and to cope actively with the rapid change of international telecommunications environment, established non-governmental and non-profit organization TTA [Telecommunication Technology Association] in which telecommunication common carriers, manufacturing interests and entities have voluntarily participated began its function in February 1989.

For the last year, 21 working groups under three subcommittees, in which 106 common carriers, manufacturing interests and entities joined, have been in action in the standardization field of TTA.

Furthermore thanks to the strong will for the opening of domestic communication market by Korean government and the effort to contribute to the improvement of international communication environment, authorization system for telecommunication equipment will be improved from the First of July in this year. And TTA perseveres in its efforts to construct the cooperative systems with the overseas standardization organizations such as TTC in Japan, T1 in America and ETSI in Europe and also hopes to improve the relations with them by introducing hereafter TTA in detail, the Korean authorization system and the improvement course.

## 1. Preface

The development of telecommunications in Korea has shown a dramatic change in the last decade. In 1981, the total number of telephones was 3.5 million sets (telephone density 8.3 per 100 inhabitants). Since then, the Government has made extensive investments policies in the telecommunications technical development project and timely introduction of Electronic Switching Systems in telephone networks, and transforming Government-controlled telephone business to public corporations for more flexible operations. They have added more than one million lines every year; by the end of 1989 the total number of lines were 13 millions (over 25 per 100 inhabitants). The telephone density is almost that of Spain and Taiwan, furthermore, direct dialing service throughout the country was achieved with 100 percent digitalization of toll and rural area exchanges. I think we made significant progress in plain voice telephone service to our people during this era.

There also have been many changes in the environment of the telecommunications industry.

With the growing recognition as a high value-added technology-intensive industry since the 80's the problem of opening up of telecommunication equipment and services has become a major point of dispute in international trade. In the domestic market, telecommunication industry has been administered by the government because of its monopolistic aspect and being a public estate essential to the lives of people. However, in order to cope with strong demand of various kinds of service, and owing to the difficulties of application standards to each area of telecommunication business according to the rapid development of computer and telecommunication technology, privatization of telecommunication industry and restructuring it on a competitive basis are becoming more inevitable.

Of course, collective efforts are now being made by government, and during '90's, the government, common carriers, manufacturers and all other related bodies are making an effort to modernize communication, to disseminate information culture and to build an advanced information society.

To start with, there are already 130 companies working on information communications service area. Packet switching line service, dedicated circuit line service, high speed switching service and diversified value-added communications services are also being introduced to the public.

In response to such trends that standardization activities are being governed by private organizations in advanced countries and cope actively with the rapid change of international telecommunication environment, non-governmental and voluntary organization TTA opened its office in February 1989 for the purpose of promoting standardization at private level and strengthening cooperation with other international standardization institutes.

Now let me introduce the detailed activities of TTA, type approval systems in Korea and its improvement.

## 2. Introduction to TTA

To start with, it will be helpful to understand the history of standardization activities in Korea. The working procedure of standardization activities was initiated either by the government or the common carriers who had to obtain the approval of the minister of communications later. A total of 15 items of standardization have been developed in this way from 1981 to beginning of 1989 such as modems, telephone sets, and credit cards. Since the establishment of TTA in February 1989, all the standardization activities for telecommunication equipment and connection protocols became the sole responsibilities of TTA while the government is limiting its role to conform the fairness and the transparency of its procedure and announce some of them with national standards if it is necessary.

One might easily be able to understand TTA of Korea if you compare it with TTC of Japan, T1 committee of



U.S.A. or ETSI of Europe. The only difference is that TTA is also responsible for ITU related activities. Therefore, TTA can be taken as having the same functions as TTC of Japan plus ITU affairs.

Now let me review the member participants, organization, standardization practices and results of TTA in more detail.

### 2.1 Membership of TTA

TTA is a non-governmental, non-profit organization for standardization of telecommunication and is made up of common carriers, research institutes, individuals and groups. We are really satisfied with the fact that seven foreign companies are working with the other TTA members and more than 300 persons are participating in the working group under the standardization subcommittee. Standardization Committee members who were nominated by the president of TTA out of 117 affiliating members, have the right to vote to decide TTA standards.

This system was adopted after studying other foreign standardization institutes and considering the need to regulate standards professionally and orderly. A draft standard is presented to Standardization Committee only after having consensus at the Working Group made up of participants from all groups. Therefore, draft standards have passed the Standardization Committee unanimously and not one draft standard has been rejected yet.

### 2.2 Organization of TTA

The organization of TTA is similar to TTC of Japan and T1 committee of U.S.A. as shown in Table 2.2A [not reproduced] except that it includes ITU Committee. The advantage of such organization, like having standardization committee and ITU committee is that it can quickly absorb overseas communication technologies for considerations into domestic standardization. It is, however, essential for such organization to have more support from the government because TTA is acting as a bridge between ITU Headquarters in Geneva and Korean telecommunications and broadcasting communities for the MOC.

Another characteristic of the organization of TTA is that it has a hierarchical structure in which every member company participates in Working Groups by interest and actually sits down to discuss technical matters to draw the best standards. The higher level committees such as Standardization Committee and Subcommittee consisting of general managers or directors of member companies deal with policy-making decisions. This system allows decisions to be made without any delay and standardizations to proceed in the right direction. Higher level committees can also act as mediators between members of working group who's opinions conflict, by coordinating the opinions of working groups and returning them the opinions from the broader point of view. Board of Directors approves general policy

matters such as finance and operation projects and is not directly involved in the standardization activities.

### 2.3 Standardization Procedures

Before discussing the standardization procedures of TTA, in order to help your understanding, let me begin with standardization systems for communication in Korea of which TTA procedures form a part.

Standardization system for communication equipment and network connecting procedures in Korea is as shown in Table 2.3A [not reproduced] above. Government, TTA and its member participants work systematically, their specific role centered around TTA.

Any research center, academic institute, individual group or other organization that has drafted its own proposal for a standard may submit it either to TTA or the government institute, MOC, for consideration for the draft standard. Those presented to MOC will be reviewed as to whether they are worth a consideration for national standard and, if so, then passed on to TTA.

After having a consensus opinion for the draft standard, TTA decides whether to accept it as a TTA standard or to transfer it to MOC recommending it be used as a national standard.

There is a Technical Standards Committee (TSC) in MOC which reviews and decides proposed national standards. Usually TTA's proposal is respected and accepted by TSC as a national standard without any adjustment technically. On the other hand, the government also sponsors the development of draft standards on information communication and special communication areas at academic institutes and research centers. These institutes and research centers then work on each of the projects studying foreign standardization trends, and technical developments and domestic technical availabilities.

Korea Telecommunication Authority (KTA), Data Communications Corporation of Korea (DACOM), Electronic Telecommunication Research Institute (ETRI) and other organizations are also working on draft standardization of information communication and special communication equipment area. KISDI advises Minister of Communication on national standardization policies. For such reasons, overseas standardization organizations are often visited by personnel from KTA, DACOM, ETRI, and KISDI.

Now, let me introduce standardization procedures undertaken at TTA. As seen in Table 2.3B [not reproduced] a draft standard may take as little as three months or occasionally, more than one year until it is accepted and announced as a TTA standard. A draft standard is first fully discussed by the Working Group concerned, reviewed by the relevant Subcommittee, considered by standardization committee and undergoes yet another three weeks of collecting opinions before it is effected as a fair and transparent TTA standard.

In some working groups, there are sharp interest conflicts between member companies; in this case a draft standard may not be finalized as a standard even though it has passed the coordination of Subcommittee and the consideration of Standardization Committee.

One thing that should be pointed out here is the reliability of TTA standards which is still debated by many. Standardization had long been imposed by the government in the form of type approval or connection approval. Therefore, one may say it is natural for the recommended TTA standards to seem less reliable and forcing.

The government is trying to overcome this problem by setting up Technical Standards Committee and announcing national TTA standards without any adjustments. It is for this reason that the government is planning to gradually transfer the authority of approvals to private institutes including TTA.

## 2.4 TTA Activities

The major activities of TTA since its opening in February 1989 seem to have been concentrated on overseas and domestic publicity. Also, we put all our efforts to establish a firm foundation as a standardization organization and to learn more about international standardization activities and trends by attending various meetings abroad.

Fledgling as it is, TTA is anxious to grow fast and become an established standardization organization and to be involved in active cooperation with many overseas counterparts. There are many questions still to be answered but we are hopeful that TTA will survive them and proceed in the right direction.

## 3. Authorization System for Telecommunication Equipment and Its Improvement

The authorization business for communication equipment in Korea is still government jurisdiction.

The government has been authorizing the fitness of the technical standards of terminal equipment on the basis of designed specifications and functional description of the equipment before they are distributed in market in order to ensure no harm to network and does not disturb any other public user.

However, global trends of authorization system for communication equipment and connection are shifting into the relaxation of authorizing regulation conforming only "no harm to network." Consequently, there have been strong signs of activities to improve current approval system in Korea to conform to the technical development of today and to adopt competition principles. I will discuss briefly on the current approval system of Korea and the direction towards its improvement.

## 3.1 Approval System for Wired Communication Equipment in Korea

The authorization systems for telecommunication equipment and facilities in Korea includes Type Approval based on the Basic Act of Telecommunication (Article 30); Type Inspection based on the Radio Regulation Law (Article 20); and Connection Approval for other equipment supplied by common carriers.

Type approvals are given and announced by the Minister of Communication for mainly user facilities selected. In order to apply for an approval, inspection certificate issued by the testing institute designated by the Minister of Communication shall be required. Type inspections are for radio equipment.

Common carrier's equipment such as network facilities are required to satisfy the quality assurance requirements set [for] common carriers and shall be given the connection approval for their use after the testing and inspections by designated institute.

## 3.2 Improvement of the Authorization System

The measures are being taken to improve authorization system to solve such problems as have arisen through the application of former approval system.

Type approval system and Connection approval system now became a single system of Type approval with much loosened approval standard. Only harming of network and critical conditions for connection are regulated in the new system. The testing authorities recognized by the government now include many foreign institutes.

## 4. Conclusion

I have briefly addressed the recent progress of telecommunications in Korea, the background of the birth of the voluntary standardization organization and the movements towards improvement of an approval system in Korea. All these developments resulted in the formation of a basis on which communication in Korea will further improve. Both the Korean government, private industries and the public will continue to support the achievement of advanced telecommunications society and on-going development technology.

We have developed and supplied full electronic digital switching system, TDX and became the 10th country to achieve this. We are continuing our efforts for the effective commercialization of TDX-10 in 1990 and planning to develop and introduce ultra-large scale integration semiconductor products, 16M DRAM and 64M DRAM. The commercialization of 16M DRAM and the development of prototype of 64M DRAM are scheduled to be completed in 1992.

The development plan for ISDN technology using TDX-10, consists of the development of narrow band ISDN until 1991, middle band ISDN until 1996 and wide band ISDN until 1996.

The government is planning to have a communication and broadcasting satellite in order to be able to prepare actively for the space age of 21C, to eliminate poor reception areas and to help provide high quality broadcasts.

In closing, as I mentioned we are trying more close cooperation with the regional standardization group to improve our procedure to meet international standard. Since TTA is only one and half years from the opening of office and we are in the stage of development in standardization activities. [sentence as published]

Thus we are attending international standardization meeting, or conference often to get more informations.

I hope this symposium leads to success in the mutual cooperation of regional telecommunications standardization organizations and builds a closer relationship between global organizations.

Thank you very much for your kind attention.

## **Telecommunications Standardization at a Crossroads—The Challenge of the 90's for CCITT**

*91FE0018F Tokyo SYMPOSIUM ON  
TELECOMMUNICATIONS STANDARDS '90  
in English Jul 90 pp 93-104*

[Article by Theodor Irmer, director, CCITT]

### **[Text] Abstract**

The almost unlimited technical progress in telecommunications and the whirlwind of structural and organizational changes is shaking Administrations, private network and service providers world-wide as well as the manufacturing industry, and it now fully hits the area of global telecommunication standardization. Strategic alliances, common practices between network and services providers and the industry, respectively, as they used to exist in the past are now disappearing rapidly under the pressure of competitive forces which render the world-wide standardization much more difficult than ever before. The customers, for a long time almost unnoticed, are voicing their needs and requirements; how do they interact with network and service providers? In addition, regional standardization organizations are entering the scene which was so far almost exclusively dominated by other standardization bodies. Only one conclusion seems to be certain: nothing will remain in the 90-ies as it used to be in the past. But what will come in the future? How can global networks and services be kept together by appropriate standardization in such a rapidly changing environment? The presentation will offer some thoughts on how this might be accomplished.

### **1. Introduction**

The almost unlimited technical progress in telecommunications and the whirlwind of structural and organizational changes is shaking Administrations, private network and service providers as well as the manufacturing

industry world-wide, and it now fully hits the area of global telecommunication standardization. A harmonious cooperation without disturbances from the outside, as it used to exist in the past and as was common practice between network and service providers and the industry, respectively, is now disappearing rapidly under the pressure of competitive forces which render the world-wide standardization much more difficult than ever before. The customers, for a long time almost unnoticed, are now also voicing their needs and requirements; how do they interact with network and service providers? In addition, regional standardization organizations are entering the scene which was so far almost exclusively dominated by other standardization bodies. Only one conclusion seems to be certain: nothing will remain in the 90-ies as it used to be in the past. But what will come in the future? How can global networks and services be kept together by appropriate standardization in such a rapidly changing environment? This presentation will offer some thoughts on how this might be accomplished.

### **2. From ISTS '87 to STS '90—A Short Review**

In 1987, TTC organized the "International Symposium on Telecommunications Standards" (ISTS '87), and I had then the honour and pleasure to speak at that event. Now, in 1990, I am indeed most grateful that TTC invited me again to speak also before STS '90.

Three years passed since ISTS '87—and it might be interesting to compare, at the beginning of my presentation, my 1987 preview for CCITT's work with what has been achieved up to now. While making such a comparison it becomes clear that much more has to be done to harness CCITT for the challenge it is facing in the years to come.

At ISTS '87 I told the audience that CCITT has to improve its working methods, structure, etc. along the lines of the three "magic Cs," namely:

- Concentration—efforts and resources are to be concentrated on those standardization topics which are of high priority and which should, therefore, be accelerated;
- Coordination—restructuring of CCITT Study Groups to concentrate activities as much as possible in one Study Group, thus reducing the time—and money—consuming "liaison" between Study Groups;
- Cooperation—leaving freedom to the various CCITT member groups (network/service providers, manufacturers, customers) by developing functional standards whenever possible and, at the same time, improving cooperation with other telecommunication standardization organizations (both world-wide and regional).

One year after ISTS '87, CCITT held its VIIIth Plenary Assembly in November 1988 in Melbourne which, fortunately, responded very positively to many aspects of the three "magic Cs"—and went even further in some

other areas. The VIIIth Plenary Assembly can be regarded as a turning point in CCITT's history: it marked a radical departure from long-standing habits and traditions and it opened a new road on which the first steps were made in Melbourne, but much more will have to follow.

### 3. Implementing the Melbourne Decisions—Do They Work?

Now, over a year passed since CCITT held in Melbourne its IXth Plenary Assembly which adopted a number of important decisions in order to streamline CCITT's structure and working methods further. These decisions have now been implemented, their implications are becoming visible, and a first evaluation may be made.

No doubt, the most important Resolution adopted in Melbourne was Resolution No. 17, dubbed "the Spirit of Melbourne." This Resolution is fundamental for CCITT's strategic development because it not only states the pre-eminence of CCITT for setting up world-wide standards, it also establishes four priority principles as signposts for reshaping CCITT, i.e. modernization, flexibility, efficiency and cooperation.

If investigating in the following the other Melbourne Resolutions and their results after implementation, it is evident that all of them have indeed given in one way or another, implicitly or explicitly, priority to the four principles—recognizing "the Spirit of Melbourne" as stipulated in Resolution No. 17. Its two requests addressed to the Plenipotentiary Conference have partly been fulfilled (Article 17 was amended in the Nice Convention: the question of a basic reorganization of both CCIs is before the High Level Committee (H.L.C.) as Task 1).

Let us now evaluate the results of the implementation of the operative Resolutions adopted in Melbourne. Not quite two years of experience might, of course, be too short for drawing final conclusions; however, first results and trends can be identified even at this stage.

Although we now have already a better functional structure of our 15 Study Groups (SGs) than before (e.g. concentration of most voice and non-voice services in Study Group I, moving digital transmission from Study Group XVIII to Study Group XV, etc.), the present structure is not yet the optimum. Liaison between Study Groups is still at a high volume (which is an indication for this situation), and the process of settling divergencies between Study Groups often takes a long time, after passing voluminous liaison documents through several Study Groups. Here, the functional structure of the Study Groups is clearly one area which calls for further reforming the present work areas reflecting still the traditional boundaries between technologies and services but which now do not exist any more. It should be pointed out that the high degree of liaison is also due to insufficient national coordination—CCITT Member organizations bring their unresolved national discrepancies to different Study Groups thus causing liaison—and

this amount of liaison cannot be reduced, even not with an optimum functional structure.

The continuous decentralization of work, fortunately, produces the expected results. More and more detailed work is carried out by Special Rapporteurs and their groups; in most cases, they prepare the input for Working Party (WP) and SG meetings, as well as the drafting of Recommendations. This decentralization has relieved the burden of WP and SG meetings—a good preparation by Special Rapporteurs shortens the workload and hence the duration of such meetings. This effect is visible in the evolution of meeting days for WPs and SGs: despite a continuous increase of workload in general, the number of meeting days for WPs, but in particular for SGs, remained constant or even decreased.

The new documentation system, implemented under Resolution No. 1, is also bearing its fruits. The now existing only two classes of contributions (normal white contributions submitted up to two months, delayed contributions submitted up to seven working days prior to a meeting whereas late contributions have been dropped), are producing the expected results as well. The seven-working-days-deadline for delayed contributions (in large SGs now the regular type of contribution!) enables printing, etc. before the meeting starts. No longer precious meeting time is wasted—before, delegates were waiting up to several days for their documents under print, whereas now all documentation is at hand one day before the meeting.

Likewise, the new layout of meeting reports (two parts only, instead of three parts) is working well; reports are now "slimmer" as they contain no longer Temporary Documents distributed during a meeting. Hence, these only two parts (General report—draft Recommendations) are also processed faster by ITU's Common Services because of their reduced volume, however, without lowering their substance. This, in turn, means that delegates now receive their reports earlier than before; and another important, positive side effect: mailing expenses are no longer swallowing up an increasing portion of CCITT's meeting budget.

Furthermore, the logistics (support functions for meetings) also improved. Based on requests made by the Chairmen of all SGs, CCITT managed to accommodate all requested meetings for WPs and SGs for the entire study period (1989-1992) at the Geneva meeting facilities (therefore, except in special cases, no more need to hold these meetings outside Geneva), and to provide the logistic support for these meetings. A new, computerized registration system for delegates is in place which provides badges and franchise cards to delegates at the opening of the meeting.

Finally, CCITT contributed to the establishment of a "Delegates' Room," equipped with PCs, printers, etc. in which delegates can produce their texts, reports, etc.

electronically (interconnection with private PCs (laptops) is also possible); since this room has been opened, it enjoys frequent usage by delegates.

Turning now to Resolution No. 2, its adoption was a milestone at the IXth Plenary Assembly in Melbourne. Draft Recommendations can now be finally approved under this Resolution at any time between Plenary Assemblies. It remains to be seen how many draft Recommendations will be finally approved under this Resolution during the current study period; a modest estimate might be 70 to 100 Recommendations, which would mean that still a considerable number will be submitted to the next Plenary Assembly (1992) for approval (for comparison: at the Plenary Assembly in Melbourne, 368 new draft and 388 substantially amended Recommendations were approved).

As stipulated in Resolution No. 2, draft Recommendations approved by this new procedure will be published immediately and therefore separately (in separate "pamphlets"). This raises the question of whether the same procedure should also be applied for those Recommendations (new/amended) still to be approved by the next Plenary Assembly, thus moving from the CCITT-"Book" to a collection of individual, separate Recommendations (similar to ISO's published standards).

I am convinced that there are many good reasons which justify, or even necessitate, a departure from the long-standing tradition of CCITT-Books. Experience with the production of the Blue Book demonstrates that, with the ever-increasing volume of such books, this traditional method is outdated, both in terms of quality and timely production. Although extra staff has been taken on and much work was given outside of ITU (which has driven up the production costs considerably), the last fascicles of the Blue Book will only appear in September 1990—almost two years after the Melbourne Plenary Assembly! The acceleration in production, because of the increased volume of texts, resulted in loss of quality well below the usual standard for which CCITT Books earned their reputation. Furthermore, customers of CCITT Recommendations expect receiving them as soon as possible after approval; many of them need these Recommendations for business purposes, and they can simply not understand why such delays occur. Therefore, quite a number of people have probably privately copied those Recommendations they so urgently need. Hence, ITU loses potential customers and, in turn, revenues needed to compensate for the high production costs. Finally, the Blue Book contains many Recommendations no longer current, but which appeared already without changes in previous Books; these Recommendations were, in the past, transferred from the previous Book on to the next and again to the next Book—one more reason for blowing up the volume of the Books!

In conclusion: the production of Recommendations in Books was perfectly alright while these Books had only a few thousand pages. However now, with about 19,000 pages for the Blue Book, it has become evident that this

traditional method is no longer applicable for the reasons outlined—it has completely outlived its usefulness.

If production of Recommendations to be approved at the forthcoming Plenary Assembly is not to result in an even greater debacle than it was the case for the Blue Book, it is clear that there must be a change—and the separate edition of all Recommendations, approved either under Resolution No. 2 or at the Plenary Assembly, would be a way out of the dilemma which is otherwise bound to happen.

Finally, Resolution No. 18 is in the process of being implemented. The convocation of the first meeting of the ad-hoc group on Resolution No. 18 is the first step, and it will be for this group to investigate how CCITT's efficiency could be further improved and then make appropriate proposals to the next CCITT Plenary Assembly.

#### 4. CCITT at a Crossroads

Undoubtedly, the decisions taken in Melbourne are now producing the expected positive results. But does this mean that we can sit back and believe that CCITT is now already sufficiently equipped to successfully cope with the ever-changing environment? In my mind, this would be a dangerous error; the telecommunication environment is no longer a static, but a dynamic one and CCITT will have to undergo an almost permanent process of continuous adaption to this dynamic environment. Just one example for this dynamism: in 1988, at the time of the Melbourne Plenary Assembly, the regional standardization organizations ETSI, T1 as well as ISO/IEC and JTC1 were just created; now, in 1990, these organizations have matured to efficient, powerful organizations and CCITT has to find ways and means to cooperate with them. Much more than any preceding decade will the 90's be the decade of changes in the standardization environment, and CCITT will have to respond to these ongoing changes if it is to maintain its role as the organization for developing world-wide telecommunication standards.

I am convinced that CCITT does have the stamina needed for such changes which have now become indispensable. I am drawing my confidence from the simple fact that CCITT Member organizations—network and service providers, industry and users—are all successfully coping with the new environment in telecommunications; they are not afraid of far-reaching structural, organizational and operational changes—they just go ahead and do them! Almost every day we hear and read of deregulation, liberalization, acquisitions, mergers, and so on—it has now become day-to-day "business as usual" for them. So it is evident that they are bringing this fresh wind of change also to CCITT which, after all, consists of its Member organizations.

Without lessening the progress achieved in Melbourne and which we discussed already, more and more fundamental changes will have to be made before CCITT has really turned into an efficient, modern standardization

organization which would reflect today's standardization requirements and hence serve its Member organizations by providing standards whenever needed. The "pre-eminence" of CCITT in today's standardization as stated in Melbourne is not just an award for decoration—such pre-eminence has to be earned and proven every day by practical work. Let us take a look at what, in my opinion, should be reviewed and changed as soon as possible.

In my mind, the Plenary Assembly in Melbourne improved many standardization "tools" (structure, documentation, decentralization, logistics, etc.), but left the standardization process unchanged; this is the reason why I am now concentrating on how the standardization process might be reshaped.

### **5.1 Reorganizing CCITT's Internal Work—From Technology-Driven to Managed, Market-Oriented Standardization**

Standardization has become a complex web of many international, regional and national organizations; it is furthermore clear that standardization has today become a complex, multi-million business.

Surprisingly, this business called "standardization" seems to have its own rules and culture, much different from what can be generally found in telecommunications: it is done by experts who set the goals, carry out the work, and finally produce the result—with no or little involvement of the management of the organizations to which they belong. (Note: The term "management" encompasses the executive level in CCITT's Member organizations (Directors, General Managers, Chief executives, etc.)) The same management, however, exercises in all other activities (R&D, Production, Sales, etc.) its full responsibilities: no task is undertaken without being previously authorized, budgeted and monitored in each phase of its realization! This phenomenon not only exists in CCITT, but it is common to almost all standardization organizations:

Experts in the Study Groups define their standardization objectives by questions which they draft; they carry out their work as determined by the Questions, and finally they decide whether, and when, their work is turned into a standard (Recommendation), almost a closed cycle—seemingly without involvement of their organizations' managements.

This was not always the case: in the past, the Plenary Assemblies were the forum at which the managements of CCITT's Member organizations had the ultimate power to decide what should be standardized (approval of Questions) and to assess the outcome (approval of draft Recommendations). Legally, this power is still attributed to a Plenary Assembly but in practice it can no longer be enforced: Questions are approved en bloc as proposed, draft Recommendations are only rubber-stamped—logically, because who will start discussing 350 Questions in detail, plus 368 new draft and 388 amended Recommendations at a Plenary Assembly like

in Melbourne; neither is there sufficient time for such undertaking, nor are the experts present at a Plenary Assembly.

We have to realize that technical expertise is to be found today in the Study Groups, and the standardization process is therefore in most cases a technology-driven process. But how do the technical experts know what the strategic plans of the managers in their organizations are in an increasingly competitive environment? Are they aware of the future markets for which their management needs standards, and when? While I am not debating the fact that the technical expertise will remain also in the future in Study Groups, I believe that it is crucial for CCITT's future success that the technology-driven standardization process has to be shifted more towards a managed, market-oriented process. This is only possible if the respective managements of CCITT's Member organizations exercise their leading role as was formerly the case in the Plenary Assemblies but which has become today almost impossible for obvious reasons.

Let us discuss the principles of such a managed, market-oriented standardization process. The key element is the re-involvement of the managements of CCITT's Member organizations in the standardization process. It means that management should be ready to commit itself to standardization more than it is the case at present (strange to have to stress this, regarding the importance of standards!). Only then it will be possible for CCITT to respond to market needs, i.e. to produce standards in a managed, market-oriented process, concentrating on standard production as identified for the telecommunication markets. In other words: standardization will be carried out, as any other business task, with objectives, goals, deadlines, etc.; the same rules apply as for any other "product" in telecommunications, whether hard or software, a service, etc. Standards are "products" used in the telecommunications market, and they ought to be "produced" along the same lines as other telecommunication products.

### **5.2 So Far the Theory—But How About the Practice?**

How can we in practice implement such a managed, market-oriented standardization in CCITT? First and above all, in my opinion, only in an evolutionary way; we will have to start in some important standardization areas and, after testing this new approach, we might expand it gradually also to other areas.

In practical terms, managed, market-oriented standardization could be implemented as follows:

After the managements of CCITT Member organizations established a list of major standardization areas for which standards are to be drawn up, indicating also the time when they should be available, Questions covering these areas are drafted and allocated to the relevant Study Groups. During this first phase, there might additionally be some other Questions left to be dealt with in the Study Groups, not relevant for market-oriented standards (for example: performance standards,

routing/numbering standards, terms and definitions); however, the bulk of CCITT work would, indeed, consist of strategic and therefore market-oriented standardization areas such as ISDN, B-ISDN, IN, TNM, etc.

After allocating these Questions to the relevant Study Groups they are being dealt with as usual; however, here comes a new idea: the work progress should be monitored by a project management. What does this mean and why should it be done this way?

All major standardization areas in CCITT (see examples quoted already) are covering more than one Study Group, in many cases four, five or even more; this is the reason why one Study Group has to send rather voluminous "Liaison Statements" to its neighbouring Study Group which then, in turn, contacts the next one—a very time-consuming process (intervals between meetings of the Study Groups involved!), and there exists at present neither a central monitoring nor any corrective measures in case this process gets stuck somewhere in the pipeline between Study Groups.

Therefore, "project management" seems to be a suitable instrument to monitor and control the liaison—with the right to intervene in case liaison is not carried out in time and to the required extent. Such a "project management team" (to be set up for each major standardization area involving several Study Groups) might consist, for example, of one expert from each of the Study Groups involved, and its Chairman might come from the Study Group having the largest part of work in a particular area; there are, however, also other possible forms of project management teams, e.g. by including staff members of the CCITT Secretariat in such teams.

Please note that in this proposal the project management team has only controlling and monitoring functions—the actual work is still carried out by the Study Groups. We had similar teams in CCITT already: in 1972, when standardization of digital networks started, which involved several Study Groups, the Chairmen of Study Groups VII, XI, XV and Study Group Sp.D formed a team—convened by the Chairman of Study Group Sp.D (now SG XVIII)—and this team coordinated the work of their respective Study Groups very well.

In case the institution of "project management teams" works out well, we might then consider later on the next step: namely entrusting such project teams with the study of standardization projects, eventually producing standards which would lead to a new "horizontal" level above the "vertical" structures of the Study Groups.

In my opinion, a combination of the involvement of the managements of CCITT's Member organizations plus the project management should meet the two objectives: a managed (by project teams) and market-oriented (by involvement of the managements) standardization process should be achieved, and this is precisely the objective I stated before.

But even if this idea of a managed, market-oriented standardization is accepted and implemented: there would be a need to monitor progress of the various standardization projects and to set priorities as they might evolve in the time gap between Plenary Assemblies. The present four-year study period is too long to assume that, whatever is decided at a Plenary Assembly (work programme, Questions) would remain valid and unchanged for the following four years. This is not at all the case; technology is developing so fast that matters to be standardized, which were still considered important and urgent at a Plenary Assembly, seem already considerably less important two years later; on the other hand, during a four-year period some priorities might well come up suddenly which nobody dreamed of at the preceding Plenary Assembly. Therefore, there is, in my opinion, a need for an instrument which would consistently monitor CCITT's work during a study period, and to adapt it if necessary without having to wait up to the next Plenary Assembly.

Such an instrument could be a "Strategic Review Committee," formed by selected members of Administrations, RPOAs and SIOs. It would assess CCITT's work annually, monitor the progress, set priorities, etc.—a kind of a "CCITT Administrative Council between Plenary Assemblies." This "Strategic Review Committee" would permit a flexible adaption of CCITT's standardization work towards those standardization areas which were identified as priority areas during a study period, and it would therefore complement the managed, market-oriented standardization process described above.

### 5.3 Reorganizing the External Area—CCITT's Cooperation With Other Standardization Organizations

Here we must investigate CCITT's relation and cooperation with other international standardization organizations such as ISO and IEC (operating world-wide like CCITT), and the regional standardization organizations (RSOs) operating on a regional basis and—unlike ISO and IEC—are newcomers in the standardization arena.

With ISO and IEC, we enjoy an excellent cooperation since several years now, and apart from normal day-to-day problems (alignment of common texts, edition of identical standards), there is at present no need to modify the existing mode of cooperation as governed by CCITT Resolutions and Recommendations (Resolutions No. 7 and 8, Recommendations A.12, A.13, A.15, A.20, A.21, and A.22).

This is much different from the other cooperation area, i.e. CCITT's relation with the RSOs, for which rules and procedures for cooperation have still to be set up. The T1 Committee invited in February 1990 ETSI, TTC and the CCIs to a "Standardization Summit" in Fredericksburg (USA) with exactly this objective, namely to discuss and define such rules and procedures for cooperation. At this meeting I proposed the following principles as a basis for establishing rules and procedures:



- CCITT and RSOs are partners and not opponents, although some “competition” seems always to be beneficial to all of them, and in particular to CCITT, in order to speed up its reshaping process;
- CCITT and RSOs are in the same boat: in particular, they share the scarce and most precious resource, i.e. the manpower (= experts), a resource which is not reproducible;
- Both, CCITT and RSOs, should demonstrate goodwill in accepting changes/modifications in their current working methods, if the cooperation strategy to be worked out should require this.

Indeed, the results achieved at this first “Standardization Summit” in Fredericksburg confirm that the regional standardization organizations and CCITT (the same holds true for CCIR) are ready and willing to cooperate closely and efficiently. In short, at this summit it was concluded that:

- All standardization organizations are committed to foster cooperation and coordination;
- The pre-eminence of CCITT (and CCIR) is recognized;
- The regional standardization organizations are ready to support and maintain this pre-eminence;
- An ad-hoc group should be formed (chaired by the Director of the CCITT) to collect information on all planned standardization activities (objective, scope, time scale) with a view to strengthen CCITT work (“synchronization” between CCITT’s activities and those of the regional standardization organizations);
- Another ad-hoc group (chaired by the Director of the CCITT) should develop a concept for electronic information exchange between the data bases of all standardization organizations (including ISO and IEC) for exchanging electronically bulletin boards, messages and documents;
- The next interregional conference should be held in Europe, upon invitation of ETSI, early 1991.

Hence, this first interregional conference in Fredericksburg was a success; it took the first steps in the right direction, i.e. to establish the basis for fruitful cooperation and coordination between CCITT (and CCIR) and the regional standardization organizations—more concrete steps will now have to follow.

## 6. Conclusion

It is true: it is not an easy job to fundamentally overhaul CCITT’s standardization work, both internally as well as externally. In today’s standardization environment there are competing market forces, different objectives, different time frames, political or regulatory powers involved which have to be brought under one hat in CCITT. But despite all these problems, while struggling with these obstacles which hamper today’s standardization, we should never forget that world-wide standards for telecommunications, at no other time, have been as important as they are now. To tie the complicated and ever-increasing world-wide telecommunications web together by CCITT standards is worth every effort—and I am convinced that STS ’90 will contribute its fair share to achieve this goal!

## Progress of Telecommunication Technology

*91FE0018G Tokyo SYMPOSIUM ON  
TELECOMMUNICATIONS STANDARDS '90  
in English Jul 90 p 106*

[Abstract of article by Takemochi Ishii, professor, University of Tokyo]

## [Text] Abstract

In this age of internationalization, we are approaching the stage where we can utilize international time differences. Thus, with the twenty-four-hour working system, the demand for communications services throughout the world in spatial terms has come to be regarded as reasonable. Such services, moreover, are rapidly becoming a keystone of society. I will survey this technological background from the aspects of industrial structure and from the abilities of information equipment and systems. I will also refer to recent problems in the R&D of the technologies concerned.



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